

CREDIT OPINION

12 July 2021

Update

 Rate this Research

RATINGS

Braskem S.A.

Domicile	Sao Paulo, Sao Paulo, Brazil
Long Term Rating	Ba1
Type	LT Corporate Family Ratings
Outlook	Stable

Please see the ratings section at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.

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CLIENT SERVICES

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EMEA	44-20-7772-5454

Braskem S.A.

Update following affirmation of Ba1 rating; outlook revised to stable from negative

Summary

[Braskem S.A.](#)'s (Braskem) Ba1 rating is supported by its position as the largest petrochemical company in Brazil and largest thermoplastic resins producer in the Americas, with historically above-industry-average operating margins because of high capacity utilization rates, long-term client relationships and product customization. The rating also reflects the company's dominant market position in Brazil and its geographic diversification with operations in the US, Mexico and Europe. Finally, the company's sizable cash position, history of positive free cash flow (FCF) generation even under adverse market conditions and liability management initiatives support its adequate liquidity and are additional credit positive factors..

The rating is constrained by the company's high exposure to the volatility in petrochemical spreads. The rating also takes into consideration the company's exposure to [Petroleo Brasileiro S.A. - PETROBRAS](#) (PETROBRAS, Ba2 stable) and [Petroleos Mexicanos](#) (PEMEX, Ba2 negative) for the supply of naphtha and ethane in Brazil and Mexico, respectively. Additional credit concerns include the current supply issues in Mexico, potential additional liabilities related to Alagoas and Braskem's shareholders' intention to divest the business.

On 7 July, we affirmed Braskem's rating and changed the outlook to stable from negative to reflect the company's strengthened cash generation and credit metrics, which provides a cushion to its credit quality against potential future financial constraints of existing overhangs in Mexico and Alagoas. Braskem's consolidated EBITDA increased to BRL16.9 billion (\$3.1 billion) in the last twelve months (LTM) ended March 2021 from BRL6.5 billion (\$1.6 billion), while adjusted gross leverage (including Mexico) fell to 3.5x in the last twelve months ended March 2021 from the 10.8x peak in Q2 2020. For 2021, we expect EBITDA to peak at \$4.5 billion-\$5 billion and adjusted gross leverage to decline further to about 2x before gradually returning to more normalized levels of 3x-3.5x in 2022-23. Accordingly, Braskem's ratings would be appropriately positioned even with potential additional liquidity calls from these issues, which abates risks related to a rating downgrade in the short term.

Credit strengths

- » Positions as the largest producer of thermoplastic resins in the Americas (with around 70% market share in Brazil), the largest polypropylene (PP) producer in the US and the largest polyethylene (PE) producer in Mexico
- » Good product and geographic diversification
- » Sizable cash position, history of positive FCF and liability management initiatives, which support the company's good liquidity
- » Increased feedstock diversification through investments in natural gas-based projects and international expansion

Credit challenges

- » A commodity-based company, exposed to volatility in petrochemical spreads and supply-demand dynamics in global and regional markets
- » Exposure to PETROBRAS and PEMEX for feedstock supply in Brazil and Mexico, respectively
- » Uncertainties related to the supply issues in Mexico, and judicial disputes and potential liabilities stemming from the geological event in Alagoas
- » Uncertainties related to Braskem's shareholders' intention to divest the business

Rating outlook

The stable outlook reflects our expectations that Braskem's credit metrics and liquidity will remain adequate in the next 12-18 months, thus mitigating potential risks and additional liquidity calls from the overhangs in Alagoas and Mexico.

Factors that could lead to an upgrade

An upgrade of Braskem's rating would require a full resolution of the current overhangs related to the geological event in Alagoas and the supply issues in Mexico, or further sustained improvements in liquidity, financial flexibility and credit metrics that would mitigate any residual risks from such overhangs under various scenarios of stress. An upgrade would also require:

- » continued track record of a conservative financial policy, sound liquidity and positive free cash flow generation
- » leverage (as measured by total adjusted debt/EBITDA, including Mexico) sustained below 3.0x.

Factors that could lead to a downgrade

The rating could be downgraded if Braskem's liquidity profile deteriorates because of additional material liabilities from litigations and class actions, weaker-than-anticipated sales volumes or petrochemical spreads that result in higher leverage or cash burn, or more aggressive financial policies, including dividend payout consistently above the minimum level established by law. Furthermore, negative rating pressure could result from weaker operating results on a sustained basis or persistently high leverage through the cycle, with:

- » total adjusted debt/EBITDA (including Mexico) of 3.5x or above on a sustained basis
- » retained cash flow/total debt lower than 15% (17.3% for the 12 months ended March 2021) on a sustained basis.

Key indicators

Exhibit 1

Key Indicators for Braskem S.A.^{[1][2][3]}

in US billions	FYE	FYE	FYE	FYE	FYE	LTM	Moody's
	Dec-2016	Dec-2017	Dec-2018	Dec-2019	Dec-2020	Mar-2021	12-18 Month Forward View
Revenue	\$13.7	\$15.4	\$16.0	\$13.32	\$11.5	\$12.7	\$13 - \$15
Net Property Plant and Equipment	\$8.9	\$9.0	\$8.1	\$8.6	\$7.4	\$7.1	\$6 - \$7
EBITDA Margin %	24.9%	25.0%	19.4%	11.9%	18.9%	24.6%	22% - 28%
EBIT / Avg. Assets	16.0%	17.4%	14.4%	4.0%	9.0%	14.9%	12% - 18%
Debt / EBITDA	3.1x	2.8x	3.3x	7.0x	5.2x	3.5x	2.5x - 3.5x
RCF / Debt	5.3%	16.6%	19.3%	2.2%	12.2%	17.3%	15% - 25%
EBITDA / Interest Expense	3.2x	3.8x	3.9x	1.8x	2.2x	3.1x	3x - 5x

[1] All figures and ratios are calculated using Moody's estimates and standard adjustments.

[2] Periods are Financial Year-End unless indicated. LTM = Last Twelve Months.

[3] Moody's Forecasts (f) or Projections (proj.) are Moody's opinion and do not represent the views of the issuer.

Source: Moody's Investors Service

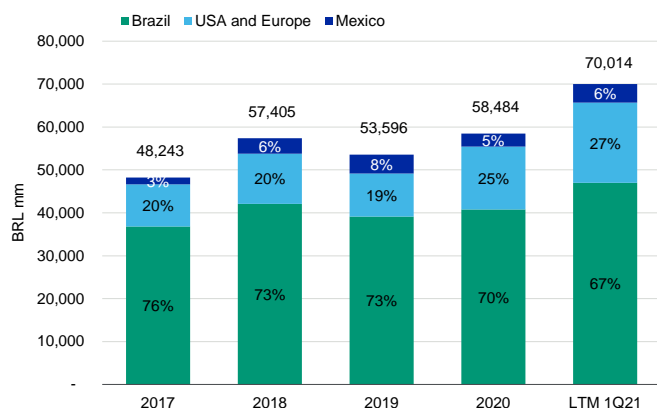
Profile

Braskem S.A. (Braskem) is the largest producer of thermoplastic resins (polyethylene, polypropylene and polyvinyl chloride) in the Americas, with an annual production capacity of 9.3 million tons. Braskem also has a production capacity of 10.7 million tons of basic petrochemicals such as ethylene, propylene and gasoline, among others; and about 1.4 million tons of caustic soda, EDC (ethylene dichloride) and chlorine. For the 12 months that ended March 2021, the company reported consolidated net revenue of BRL70 billion (\$12.7 billion), with EBITDA margin of 24%.

Exhibit 2

Revenue breakdown

In BRL million

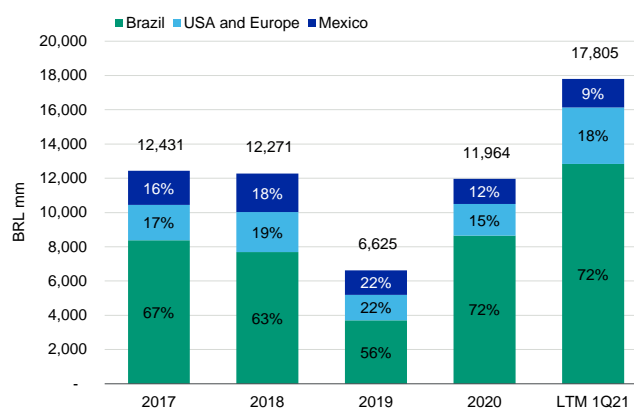


Sources: Braskem S.A. and Moody's Investors Service

Exhibit 3

Reported EBITDA breakdown

In BRL million



Sources: Braskem S.A. and Moody's Investors Service

Detailed credit considerations

Strong market position in the Americas, with good business profile and diversification

Braskem is the largest producer of thermoplastic resins (PE, PP and PVC) in the Americas, the largest PP producer in the US and the largest PE producer in Mexico. Globally, Braskem is the eighth-largest PE producer and the third-largest PP producer. In Brazil, Braskem is the only integrated (first- and second-generation) petrochemicals company with a market share of 60%-65%. The company's market position, combined with a sophisticated logistics and distribution system for resins in Brazil, provides it with significant advantages in the domestic market. The company is geographically well diversified, with operations in Brazil, US, Mexico and Europe, and exports to several other countries.

Historically, about 30%-40% of the company's total EBITDA is generated from operations outside Brazil. Braskem's geographic footprint should improve as the company continues its strategy of international expansion, enhancing product and feedstock diversification. Braskem started a new PP plant in the US in Q3 2020, adding 450,000 tons of production capacity after the full ramp-up. The total investment was around \$675 million, and we expect about \$150 million-\$200 million in annual additional EBITDA for Braskem from this expansion.

Braskem's diversified product offering serves a wide range of end markets from food packaging and agriculture to automotive, construction and other industrial activities, which reduces the company's exposure to a specific segment and the risk of a sudden shift in demand. Food packaging is the segment with a higher representation in the company's sales mix in Brazil's market (23% of total PE, PP and PVC sales) followed by construction (12%) and other industrial activities (11%). Such diversity helped temper the strain of the coronavirus pandemic on the company's sales mix. In April 2020, which was the worst hit month of the pandemic in Brazil, sales remained steady for about 70% of Braskem's product offerings, mostly in hygiene, health and packaging products, even as sales in the construction and automotive segments weakened. By Q1 2021, Braskem's sales volumes normalized and improved in some cases to a record level in all regions where the company operates, with capacity utilization reaching 82% in Brazil, 78% in the US and 93% in Europe. In Mexico, capacity utilization was low at 58% reflecting the supply issues and plant outage in December 2020 and January 2021, which offset the benefits of the ramp-up of a fast track solution to increase the supply of ethane.

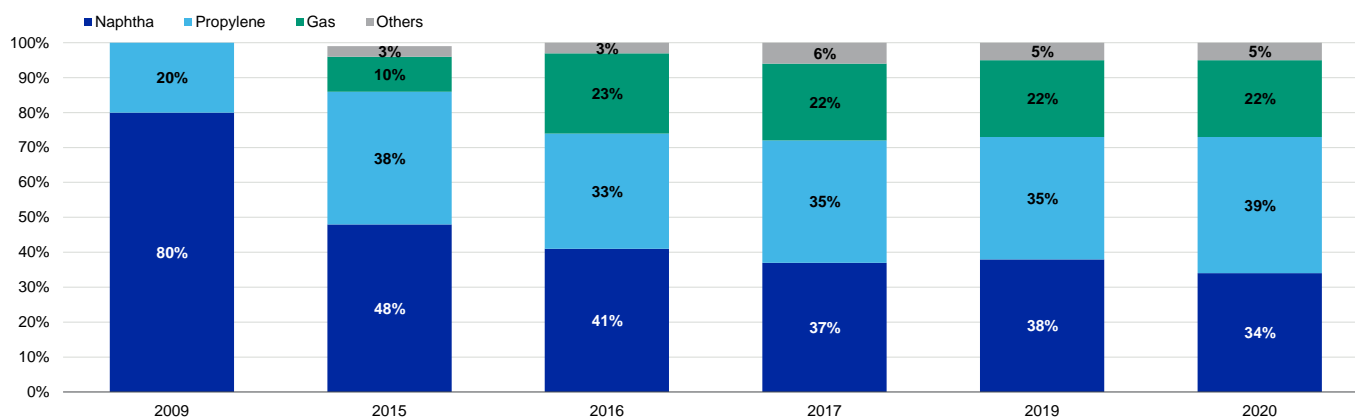
Increased feedstock diversification following investments in natural gas-based projects and international expansion

Braskem is highly susceptible to feedstock price volatility because raw materials represent about 70% of its total consolidated cost of sales. The ability to locate production facilities in areas where it is possible to obtain high quality raw materials at the right quantity and low cost allows the company to better sustain its profitability over industry cycles.

In 2009, all of Braskem's operations were based in Brazil and its raw material needs were highly concentrated in naphtha (80% of total). As a result of the company's business internationalization, its feedstock base has become more diversified. In 2010 and 2011, Braskem expanded its operations into the US and Europe with the acquisition of [Sunoco LP](#) (Ba3 positive) and [Dow Chemical's](#) (Baa2 stable) PP business. Therefore, the share of propylene feedstock increased significantly to 38% in 2011 from 20% in 2009. In 2016, the company entered the Mexican market with the start of the ethane-based Ethylene XXI complex, taking an additional step into feedstock diversification. Later in 2017, the company converted its cracker in Bahia to a flexible cracker and signed a 10-year agreement with an affiliate of Enterprise Products for the supply of ethane feedstock, replacing up to 15% of naphtha required for the production of ethylene in Bahia's petrochemical complex. In Q3 2020, Braskem started a new PP plant in the US, for which propylene is the main feedstock.

Exhibit 4

Braskem increased its feedstock diversification significantly over the last decade



Source: Braskem S.A.

Currently, about 34% of Braskem's feedstock costs are related to naphtha, of which 30%-40% is provided by PETROBRAS and assured through long-term agreements. In June 2020, Braskem signed a new five-year naphtha supply contract with PETROBRAS, covering the

local feedstock needs for the petrochemical clusters in Bahia (BA) and Rio Grande do Sul (RS). The contract establishes annual naphtha volumes ranging from 650,000 tons to 3.5 million tons, at 100% of the reference price (CIF NW Europe/Basis ARA). Later in December 2020, Braskem signed new five-year agreements for the supply of up to two million tons of naphtha per year for the São Paulo (SP) cluster and up to 580,000 tons of ethylene equivalent (volume of ethylene per ton of ethane and propane) to the Rio de Janeiro (RJ) cluster. The remaining naphtha needs are covered with imports from Algeria and other countries, based on annual supply agreements and spot prices.

About 22% of Braskem's feedstock costs are related to ethane, including the supply assured through a 20-year contract with PEMEX. Under this take-or-pay agreement, PEMEX is obliged to provide and Braskem is required to purchase 66,000 barrels per day of ethane until year-end 2035 at prices based on the highest reference between Mont Belvieu and Henry Hub, plus a discount. Currently, PEMEX's ethane production is insufficient to fully cover Braskem's ethane needs, which is leading to lower utilization rates in Braskem's operations in Mexico. Until 2019, PEMEX was complying with the deliver-or-pay clause and compensating Braskem financially for the lower supply volumes. However, since the beginning of 2020, PEMEX ceased to pay the liquidated damage obligation, which, so far, has resulted in a total delinquency amounting to \$119 million (as of December 2020), and in lower-than-desired profitability and higher-than-intended leverage levels in the Mexican operations, which is hurting Braskem's consolidated credit metrics.

Escalating supply issues in Mexico

Braskem's operations in Mexico are not running at full capacity utilization rate because of ethane feedstock supply disruption. The company's Mexican joint venture, Braskem Idesa, had been receiving only 50%-60% of total ethane feedstock requirements, and since the beginning of 2020, it ceased to receive the financial compensation from PEMEX for the lower volumes. On 2 December 2020, Braskem Idesa received a notification from the Centro Nacional de Control del Gas Natural (Cenagas), a Mexican state-owned agency solely responsible for the natural gas pipelines and transportation in the region, related to the unilateral termination of the service of natural gas transportation, an essential energy input for the production of PE in the petrochemical complex of Mexico. As a result, Braskem Idesa suspended operations at the plant for about one month. In January 2021, Braskem announced that operations at the plant have restarted through an experimental business model. In March 2021, Braskem Idesa has signed a memorandum of understanding with PEMEX setting out respective understandings for the discussion of potential amendments to the Ethane Supply Contract and a 15-year supply agreement with Cenagas for the transportation and supply of natural gas to the plant in Mexico.

The gradual resumption of operations at the Mexican petrochemical complex during Q1 2021 and still low supply level have led to weaker profitability in this segment, with the company-reported EBITDA margin declining to 44% in Q1 2021 from 60% in 2018, when the cracker was running at higher capacity. To solve the supply issue, the company built the infrastructure to enable the import of ethane from the US at a competitive price. This solution involves importing up to 12,800 barrels per day of liquid ethane from the US, equivalent to 19% of Braskem Idesa's feedstock needs, and transporting it 10 kilometers by truck from the Coatzacoalcos Port to the plant. While expensive, fuel transport by truck would allow the cracker to run close to full capacity. This solution was implemented in February 2020 and we estimate that it provided Braskem \$30 million-\$50 million in additional EBITDA for the full year at an investment cost of \$4 million. In Q1 2021, Braskem increased its import capacity to about 30% of the plant's requirements to reduce its reliance on PEMEX even further at an investment cost of \$4.5 million. In the long term, Braskem plans to build a proper ethane import terminal at the Coatzacoalcos Port, which would include one or two large tanks capable of importing at least 50,000 barrels of ethane per day. However, the final investment decision still requires visibility on the resulting renegotiation of the supply agreement with PEMEX. As well, the resulting capital structure, cash flow generation profile and timing for dividend upstream from the Braskem Idesa joint-venture remains uncertain and subject to the final terms and conditions of the ethane supply agreement negotiation with PEMEX.

Although Braskem Idesa is consolidated in Braskem's financials, its debt and cash flow are non-recourse to Braskem. Still, we have always incorporated Braskem Idesa in our credit analysis of Braskem given the strategic importance of the asset to Braskem both in terms of geographic and feedstock diversity, since this is the main gas-based operation Braskem owns. However, given the current overhangs and increasingly low visibility regarding the supply issues with PEMEX and other state-owned companies in Mexico, we believe Braskem's willingness to provide support to the joint venture has diminished and therefore liquidity risks are contained to Braskem Idesa's level. Braskem's maximum financial exposure to the joint-venture is the \$350 million in contingent equity and reserve account requirements.

Credit metrics improved fast on positive industry dynamics and debt payments

Braskem's credit metrics deteriorated significantly in 2019 because of lower petrochemical spreads. Weakening demand, coupled with oversupply, in particular for PE, led to a roughly 25% decline in petrochemical spreads for 2019, and contributed to a 43% drop in Braskem's EBITDA during 2019. Additionally, Braskem's total gross debt increased with the depreciation of the Brazilian real (because 98% of Braskem's total debt is in US dollars) and the additional debt from a \$2.3 billion bond issuance in October 2019 as Braskem retained \$608 million in cash proceeds. As a result, Braskem's adjusted gross leverage (including Mexico) rose to 6.8x as of year-end 2019 from 3.3x as of year-end 2018.

In addition to lower spreads, Braskem's operating performance and overall profitability have been hurt since 2019 by lower capacity utilization in Mexico because of supply issues with PEMEX and by the shutdown of the chlor-alkali plant in Alagoas. Therefore, the company's Moody's-adjusted EBITDA margin fell to 15% in the 12 months that ended June 2020, well below its peak of 25% in 2016-17 when petrochemical spreads recorded a positive momentum, and its adjusted gross leverage peaked at 10.8x as of the end of June 2020 (including Mexico's project finance debt).

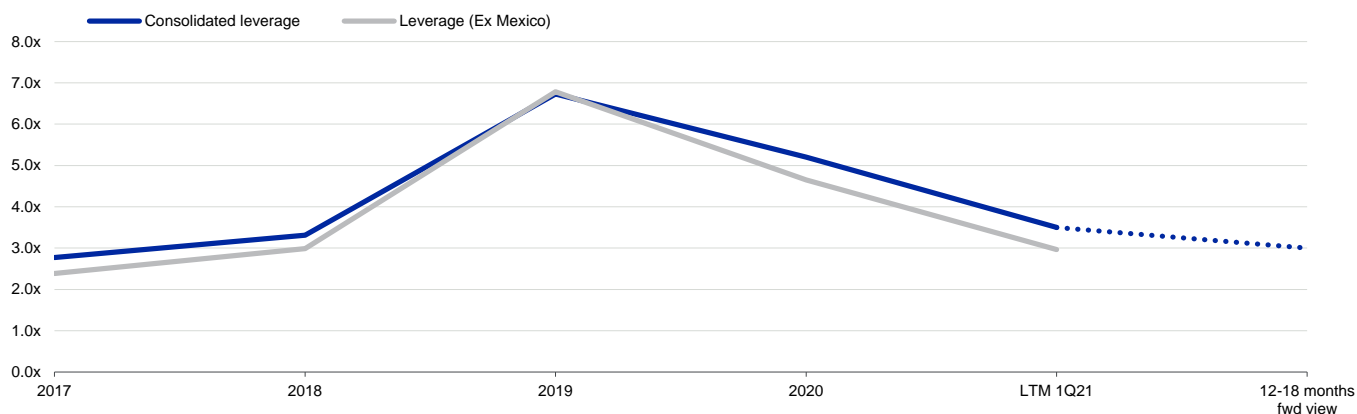
From Q3 2020 onwards, however, the faster-than-anticipated recovery of the Brazilian market and wide petrochemical spreads mainly from relatively low naphtha prices and rising polyethylene prices supported a fast deleveraging. Braskem's consolidated EBITDA increased to BRL16.9 billion (\$3.1 billion) in the last twelve months ended March 2021 from BRL6.5 billion (\$1.6 billion) in 2019, while free cash flow rose to BRL3.8 billion from BRL1.4 billion in the same period. For 2021, we expect Braskem's EBITDA to peak at \$4.5 billion-\$5 billion and free cash flow to continue to be positive even after the cash outflows from the provisions at Alagoas.

Braskem's adjusted gross leverage fell to 3.5x in the last twelve months ended March 2021 (including Mexico and 100% of the hybrid notes) and we expect the ratio to decline further to about 2x at year-end 2021 before gradually returning to more normalized levels of 3x-3.5x in 2022-23. Excluding Mexico, adjusted gross leverage would be at 2.7x in the last twelve months ended March 2021. The fast deleveraging was a result of strong EBITDA from high petrochemical spreads, additional sales volumes from a new polypropylene plant in the US with an annual production capacity of 450 thousand tons, high sales volumes in Brazil, US and Europe and a \$935 million debt reduction since the beginning of the year (mainly from the full redemption of its \$500 million perpetual notes and a \$235 million tender offer for the notes due 2023 and 2041), all of which offset the low capacity utilization in Mexico.

In 2022-23, petrochemical spreads will likely soften from current high levels as oil prices rise and supply for resins normalizes after several pandemic and weather related disruptions. However, Braskem is proactively working on other initiatives to strengthen its balance sheet to withstand future downcycles, such as gross debt reduction. Through commodity cycles, assuming an EBITDA generation ranging between \$2 billion-\$3.5 billion, Braskem's Moody's-adjusted gross leverage (including Mexico) would hover around 3x-4x and with a recurring \$2 billion cash position, net leverage would be at 2x-3x, even with the full phase-out of the special tax regime (REIQ) in Brazil, which will reduce Braskem's annual EBITDA by \$200 million when fully extinct in 2025.

In addition to the sharp increase in petrochemical spreads, Braskem's cash generation and margins are benefiting from the depreciation of the Brazilian real as 100% of Braskem's revenue is indexed to the US dollar, while about 20% of its costs are in local currency. For each 1 cent of the real depreciation, Braskem's annual EBITDA increases by \$4 million-\$5 million.

Exhibit 5

Braskem's adjusted gross leverage will decline on positive industry momentum before normalizing in 2022-23

Sources: Braskem S.A. and Moody's Investors Service

ESG considerations

Corporate governance

Braskem is a listed company with shares traded on B3, NYSE and Latibex. 50.1% of Braskem's outstanding voting shares (representing 38.3% of the outstanding total shares) are held directly and indirectly by Novonor (former Odebrecht), the family-owned holding company of one of the former largest conglomerates in Brazil. PETROBRAS is Braskem's second-largest shareholder, with 47.0% of voting shares and 36.1% of total shares. The relationship between Novonor and PETROBRAS is governed by a shareholders' agreement valid until 2045. Four out of the 11 board members of Braskem are independent. Seven board members are appointed by Novonor and the remaining four are appointed by PETROBRAS. In 2019, Braskem replaced its former CEO, Fernando Musa, with the former chairman of the board, Roberto Simões, who was appointed by Novonor. The CFO is ultimately appointed by the CEO and approved by the board, and PETROBRAS also appoints one executive director (investments).

Braskem's financial policies determine the maintenance of sufficient US dollar-denominated cash to cover the next six months of operations and one year of US debt maturities, and a balance of at least 70% of its net debt in US dollars. As part of its capital structure management, Braskem maintains minimum cash sufficient to cover its short-term debt, working capital needs, committed capital spending without funding, period taxes and derivatives mark-to-market, mitigating refinancing risks. Lastly, all of Braskem's financial policies are publicly available on the company's website.

Braskem is now in full compliance with the corporate governance rules established by the NYSE, including the implementation of a code of conduct and a permanent fiscal council (Novonor appoints two members out of five). In addition, the company is listed on the Spanish stock exchange for Latin American companies, Latibex.

Uncertainties related to the judicial recovery of Odebrecht

Braskem's controlling shareholder Odebrecht (now known as Novonor) filed for judicial recovery in June 2019. Braskem's shares were neither included in the bankruptcy or in the stay period because they have been given as collateral for Odebrecht's bank loans through fiduciary lien. The banks have the right to exercise the change of control of Braskem, but have so far refrained from doing so. Odebrecht filing for bankruptcy has not had any effect on Braskem so far, but as part of its judicial recovery plan, Odebrecht is seeking potential buyers for its shares in Braskem and will likely divest the business by 2022. PETROBRAS is studying the review of the shareholders' agreement with Odebrecht to unify and divest its Braskem shares as well. A potential change of control of Braskem would only trigger an acceleration of the company's bond maturities if the change of control results in a rating downgrade of two notches or more. The banks, PETROBRAS and Odebrecht so far have not taken actions that would jeopardize the company's liquidity, such as large dividend payments.

Leniency agreement

On 14 December 2016, Braskem signed a leniency agreement with Brazilian federal prosecutors over corruption charges stemming from the Lava Jato investigations. The leniency agreement is part of a global agreement that was signed on 20 December 2016, under

which Braskem accepted fines totaling \$957 million (BRL3.1 billion). The global agreement involved Brazil's Federal Prosecutors, the US Department of Justice (DoJ), the US Securities and Exchange Commission (SEC) and Switzerland's Federal Prosecutors. Of this amount, Braskem has already paid roughly BRL2.7 billion. In May 2019, Braskem and Brazilian authorities ratified the leniency agreement. Because of the new calculations and parameters adopted by the Office of the Federal Controller General (CGU) and the Office of the General Counsel for the Federal Government (AGU), the final agreement set an additional disbursement of BRL410 million, payable in two annual installments in 2024 and 2025, adjusted by Brazil's basic interest rate SELIC.

Filing of the 20-F report for 2017, 2018 and 2019

Braskem had been unable to file its 20-F reports for 2017 and 2018 on a timely basis because the company had to conduct additional procedures and analysis with respect to internal processes and controls after the Lava Jato investigations. The US SEC granted an extension until May 2019 to file the 2017 report but Braskem announced that it was not going to be able to meet this deadline, which led to the delisting of the company's American depository shares (ADS) from the NYSE and consequent migration to the over-the-counter market. The company did not face any class actions from ADS holders related to the delisting. Braskem filed its 20-F report for 2017 and 2018 in October 2019, subsequently resuming its listing on NYSE and was able to issue debt in the cross-border market in October 2019.

The company acknowledged weaknesses in its internal controls because of a lack of resources to effectively implement and execute oversight processes, which resulted in misstatements of financial reports and adverse opinions from external auditors. In June 2020, the company filed its 20-F for 2019. The company has taken several actions in 2016-19 to remediate its material weaknesses related to anti-corruption compliance program and controls, including increased head count in the compliance department; creation of a compliance committee with independent members of the board; appointment of a senior executive to the position of Chief Compliance Officer who reports directly to the compliance committee and ultimately to the board; review of the corporate risk management methodology; and the inclusion of antibribery and anti-corruption risks into the scope of internal audit works, among others. Also, the company was subject to external, independent monitoring by the DoJ and Ministério Público Federal from 2017 to May 2020. In May 2020, the DoJ, MPF and SEC confirmed the conclusion of the independent compliance monitoring at Braskem, and certified that the company implemented all the recommendations regarding the structure and execution of its compliance program and concluded that the company meets the standards set out in the DoJ plea agreement and the SEC consent.

Braskem's operations have allegedly caused geological damages in the northeast of Brazil

In April 2019, the Public Prosecutors Office of Alagoas filed a lawsuit against Braskem, claiming that the company caused a geological event in Maceió, Alagoas' capital. The company proactively suspended its salt extraction, chlorine and caustic soda activities in Alagoas. From May 2019 until February 2021, Braskem operated its vinyl business under a less competitive and non-integrated business model, importing caustic soda and EDC to serve Brazil's domestic market, implying an annual EBITDA BRL120 million-BRL160 million lower than the integrated model. On 14 November 2019, the company announced that it submitted to the National Mining Agency (ANM) measures to permanently end salt extraction activities in Maceió with the closure of its wells. Braskem restarted its chlor-alkali plant in February 2021 and regained part of its integration, which we expect will restore about 50% of the EBITDA lost with the non-integrated model. While the operational impact of this environmental lawsuit is not relevant to Braskem's overall results because the company's entire vinyl business represents less than 5% of its total recurring EBITDA, the financial strain from penalties and cash freezes has reduced the company's available liquidity during the current crisis.

On 6 January 2020, Braskem and Brazilian authorities ratified an agreement they reached on 3 January 2020 to support the relocation and indemnification of residents of certain areas of Maceió. Under the agreement, Braskem provisioned around BRL2.7 billion (\$507 million) to support the relocation and indemnification of the local population and to close certain salt wells. However, during 2020, the provisions related to the event increased sequentially because of new families and residents that were included in the affected areas and, by September 2020, total provisions were at BRL7.9 billion.

On 30 December 2020, Braskem announced two agreements with Brazilian authorities to settle the civil actions, which added BRL1.2 billion to the BRL7.9 billion provisioned at the end of September 2020, increasing total provisions for the event to BRL9.1 billion. The agreements settled existing lawsuits against Braskem with an initial claim of BRL34.3 billion and involved the Alagoas State Public Defender's Office, the Federal Prosecution Office in Alagoas, the Alagoas State Prosecution Office and the Federal Public Defender's Office. The provisions include proceeds to relocate residents (about 15,000 families residents of the areas at risk within the districts of

Mutange, Bom Parto, Pinheiro and Bebedouro of Maceió), to close 35 salt wells and stabilize the soil, and address environmental and urban effects and damage, among others.

Although the settlement is credit positive because it reduces risks related to potential future liabilities and provides visibility regarding a potential conclusion of a definitive agreement to resolve all social and environmental aspects with authorities, Braskem remains exposed to other potential lawsuits and liabilities not covered by the agreements and to changes to the current provisions in the event of material new developments.

The provisions related to the accident do not immediately jeopardize Braskem's liquidity given the company's current strong cash generation and the distribution of payments, but reduce the company's loss absorption buffer and the excess cash that could be used for investments or debt reduction to accelerate deleveraging. To date, Braskem paid BRL710 million related to the provisions, and the remaining BRL8.5 billion in payments provisioned at the end of March 2021 are equally split in the short and long term (BRL4.23 billion due in the next 12 months and BRL4.23 billion in the long term). However, we expect payments due in the long term to be skewed toward 2022-23, given the emergency nature of these disbursements.

Goals to mitigate climate change and eliminate plastic waste

We characterize environmental risk to the commodity chemical sector as very high. Commodity chemicals can range from toxic or hazardous chemicals such as formaldehyde to relatively benign products such as salt. However, this industry sector has very high environmental risks because of the production and use of hazardous or toxic materials, the large consumption of energy and water, elevated greenhouse gas emissions and the volume of waste generated, with regulators being able to ban certain products or favor others either deemed or perceived to be more environmentally friendly. Increasing soil, air and water pollution regulations have been and are likely to remain the main environmental risk to the sector, but regulations and legal liability vary considerably from country to country. Petrochemical companies are affected by current and evolving carbon emission regulations, and for resin producers, increasing efforts to eliminate single-use plastics and improve recycling to prevent marine pollution are the main issues.

Based on its sustainable development strategy and in line with the sustainable development goals of the United Nations for 2030 and the Paris Agreement on Climate Change, Braskem announced on November 2020 its commitment to expand its efforts to mitigate climate change and eliminate plastic waste. The company's main goals to mitigate climate change include achieving carbon neutrality by 2050 and providing a 15% reduction in carbon emissions by 2030. The goals to eliminate plastic waste include expanding the green portfolio by adding 300,000 tons of thermoplastic resins and chemicals with recycled content by 2025, and one million tons by 2030; and working to divert 1.5 million tons of plastic waste away from incineration, landfills or the environment by 2030. To achieve carbon neutrality, the company will reduce emissions by focusing on energy efficiency and increasing the use of renewable energy in current operations through partnerships focused on innovation and technology; offset emissions with potential investments in the production of chemicals and polymers from renewable sources; and capture carbon emissions through research and development for the use of carbon emissions as a raw material. Additionally, Braskem will continue to pursue its mechanical and chemical recycling projects as part of its strategy related to the circular economy. Currently, Braskem has an annual production capacity of 200 thousand tons of green polyethylene that uses ethanol from sugar cane as feedstock and is investing \$61 million to expand its annual capacity by 60,000 tons.

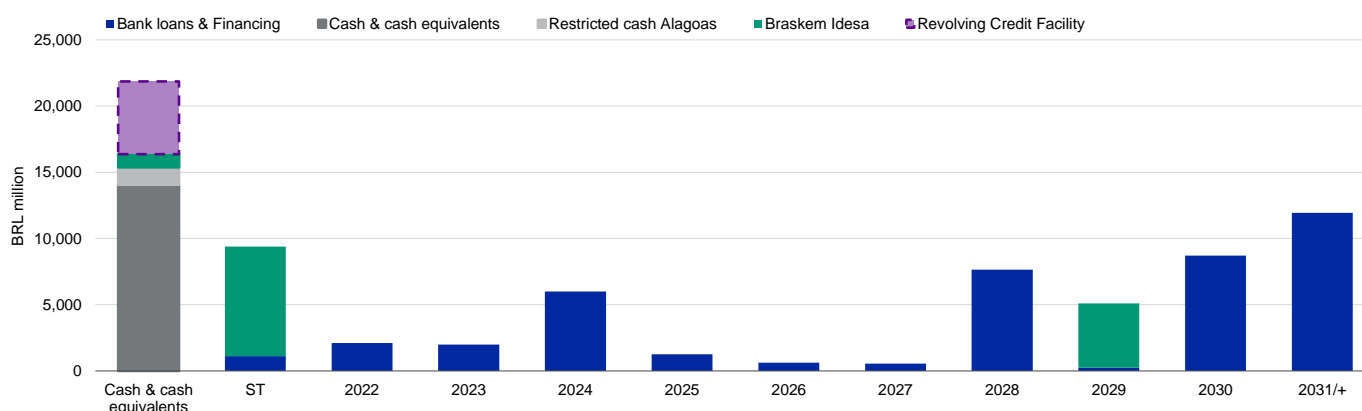
Liquidity analysis

Braskem has good liquidity, with total cash of BRL16.4 billion as of the end of March 2021, plus a \$1 billion committed credit facility available until 2023. The company's total short-term debt includes BRL8.3 billion related to the acceleration of the joint-venture project finance debt because of a technical failure to achieve the project's physical and financial completion and BRL3.1 billion in other debt instruments maturing until year-end 2022. Although we have always incorporated Braskem Idesa in the credit analysis and credit metrics of Braskem, we believe that current liquidity risks related to the supply issues are contained at the joint-venture level, with Braskem's maximum exposure being the \$350 million in contingent equity call and reserve accounts. Additionally, Braskem has other liquidity sources, such as a potential \$300 million insurance claim and BRL2 billion in tax monetization.

Exhibit 6

Debt amortization schedule

As of March 2021, in BRL million



Source: Braskem S.A.

Braskem has a solid track record of positive free cash flow generation through commodity cycles, a conservative financial management evidenced by proactive liability management initiatives and flexibility to quickly adjust cash outflows to its own internal cash generation, and no financial covenants that could threaten the company's liquidity in times of rising leverage, all of which have been key in helping the company sustain its credit quality. In 2021-22, Braskem will sustain its ability to pull levers to preserve liquidity and cover the additional cash outflows related to potential new provisions, including the monetization of additional tax credits and working capital savings.

On 29 October 2019, Braskem concluded the issuance of \$2.25 billion of notes due 2030 and 2050. As part of a liability management strategy, the company directed proceeds to repay about \$1.5 billion of the \$2 billion outstanding amount on notes due 2020, 2021, 2022 and 2023. Later in November 2019, Braskem Idesa issued \$900 million in bonds due 2029 and refinanced part of its project finance debt, which eased liquidity risks for the joint venture amid a weaker-than-expected performance. In July 2020, Braskem issued \$600 million in subordinated hybrid notes, mainly to refinance debt maturing in the next few years and for general corporate purposes. Finally, since the beginning of 2021, Braskem has redeemed its \$500 million perpetual notes and announced a \$235 million tender offer for its 2023 and 2041 notes. The transactions significantly improved Braskem's liquidity because about BRL8 billion of medium-term debt maturities (about 30% of total debt, excluding project finance) were lengthened, providing the company with a higher buffer to withstand the volatility in petrochemical spreads and overcome uncertainties related to potential liabilities from the geological event. The company's average debt tenor was 14 years as of March 2021 and cash balance (excluding restricted cash for Alagoas) covers all debt maturities through 2023.

We expect Braskem to continue to pursue liability management initiatives to reduce liquidity risks during the downturn and preserve its credit quality.

Rating methodology and scorecard factors

Braskem's scorecard-indicated outcome under our [Chemical Industry](#) rating methodology maps to Baa3, one notch above the current assigned rating, reflecting Braskem's improved credit metrics and good profitability and business profile. Our 12-18-month forward-looking view continues to map to a Baa3 rating, reflecting mainly the normalization of petrochemical spreads in 2022 after the peak in 2020-21.

Exhibit 7

Rating factors

Braskem S.A.

Chemical Industry Scorecard [1][2]	Current LTM 3/31/2021	Moody's 12-18 Month Forward View As of 7/2/2021 [3]
Factor 1 : Scale (15%)	Measure	Score
a) Revenue (USD Billion)	\$12.7	Baa
b) PP&E (net) (USD Billion)	\$7.1	Baa
Factor 2 : Business Profile (25%)		
a) Business Profile	Baa	Baa
Factor 3 : Profitability (10%)		
a) EBITDA Margin	24.6%	Baa
b) ROA (Return on Average Assets)	14.9%	Baa
Factor 4 : Leverage & Coverage (30%)		
a) Debt / EBITDA	3.5x	Ba
b) RCF / Debt	17.3%	Ba
c) EBITDA / Interest Expense	3.1x	Ba
Factor 5 : Financial Policy (20%)		
a) Financial Policy	Ba	Ba
Rating:		
a) Scorecard-Indicated Outcome		Baa3
b) Actual Rating Assigned		Ba1

[1] All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.

[2] As of 3/31/2021(L).

[3] This represents Moody's forward view; not the view of the issuer; and unless noted in the text, does not incorporate significant acquisitions and divestitures.

Source: Moody's Financial Metrics™

Ratings

Exhibit 8

Category	Moody's Rating
BRASKEM S.A.	
Outlook	Stable
Corporate Family Rating	Ba1
BRASKEM FINANCE LTD	
Outlook	Stable
Bkd Senior Unsecured	Ba1
BRASKEM AMERICA FINANCE COMPANY	
Outlook	Stable
Bkd Senior Unsecured	Ba1

Source: Moody's Investors Service

Appendix

Exhibit 9

Peer Comparison^{[1][2]}

	Braskem S.A. Ba1 Stable			Orbia Advance Corporation, S.A.B. de C.V. Baa3 Stable			Alpek, S.A.B. de C.V. Baa3 Stable			Sociedad Quimica y Minera de Chile S.A. Baa1 Negative			Olin Corporation Ba2 Stable		
	FYE Dec-2019	FYE Dec-2020	LTM Mar-2021	FYE Dec-2019	FYE Dec-2020	LTM Mar-2021	FYE Dec-2019	FYE Dec-2020	LTM Mar-2021	FYE Dec-2019	FYE Dec-2020	LTM Mar-2021	FYE Dec-2019	FYE Dec-2020	LTM Mar-2021
in US millions															
Revenue	\$13,288.7	\$11,473.7	\$12,708.5	\$6,987.2	\$6,419.8	\$6,707.4	\$6,218.9	\$5,341.2	\$5,502.7	\$1,943.7	\$1,817.2	\$1,953.6	\$6,110.0	\$5,758.0	\$6,251.7
OPERATING PROFITS	\$505.3	\$1,285.8	\$2,288.6	\$865.7	\$757.3	\$890.6	\$419.6	\$297.9	\$500.1	\$419.7	\$275.6	\$310.0	\$340.3	\$39.2	\$467.8
EBITDA	\$1,584.7	\$2,165.9	\$3,121.4	\$1,422.1	\$1,354.9	\$1,494.3	\$636.9	\$511.0	\$697.2	\$646.3	\$511.0	\$540.7	\$1,016.7	\$712.8	\$1,140.1
Total Debt (Gross)	\$10,829.9	\$11,068.2	\$10,449.5	\$4,051.5	\$4,219.2	\$4,687.7	\$1,732.8	\$1,724.7	\$1,761.2	\$1,790.9	\$1,953.9	\$1,952.0	\$4,623.3	\$5,015.1	\$5,016.0
Cash & Cash Equivalents	\$1,691.4	\$2,668.9	\$2,214.0	\$586.4	\$875.2	\$713.3	\$373.8	\$509.1	\$497.0	\$588.5	\$509.1	\$537.5	\$220.9	\$189.7	\$259.9
EBIT / Interest Expense	0.7x	1.4x	2.4x	3.2x	3.1x	3.7x	3.3x	3.2x	3.7x	5.6x	3.2x	3.6x	1.2x	0.2x	1.4x
Debt / EBITDA	7.0x	5.2x	3.5x	2.8x	3.1x	3.1x	2.7x	3.2x	2.4x	2.8x	3.8x	3.6x	4.5x	7.0x	4.4x
RCF / Net Debt	2.6%	16.1%	21.9%	14.8%	14.7%	18.4%	13.9%	13.6%	37.0%	13.2%	9.5%	9.5%	12.1%	4.9%	13.0%
FCF / Debt	3.1%	1.7%	6.5%	1.3%	3.9%	1.2%	-1.1%	9.0%	10.3%	-13.1%	-19.0%	-17.6%	3.8%	0.1%	5.2%
EBITDA / Interest Expense	1.8x	2.2x	3.1x	5.2x	5.6x	6.2x	4.8x	5.5x	5.3x	8.1x	5.5x	6.0x	3.5x	2.1x	3.3x
EBITDA Margin %	11.9%	18.9%	24.6%	20.4%	21.1%	22.3%	10.2%	9.6%	12.7%	33.3%	28.1%	27.7%	16.6%	12.4%	18.2%
Net Property Plant and Equipment	\$8,631.7	\$7,427.3	\$7,143.6	\$3,685.7	\$3,509.9	\$3,419.5	\$2,136.0	\$2,086.3	\$2,059.7	\$1,562.1	\$1,728.9	\$1,782.9	\$3,701.6	\$3,531.7	\$3,457.0
RCF / Debt	2.2%	12.2%	17.3%	12.6%	11.6%	15.6%	10.9%	9.6%	26.6%	8.9%	7.0%	6.9%	11.5%	4.8%	12.3%
EBIT / Avg. Assets	4.0%	9.0%	14.9%	8.7%	7.5%	8.5%	7.3%	6.1%	8.6%	10.0%	6.2%	6.6%	3.6%	0.7%	5.4%

[1] All figures & ratios calculated using Moody's estimates & standard adjustments.

[2] FYE = Financial Year-End. LTM = Last Twelve Months. RUR* = Ratings under Review, where UPG = for upgrade and DNG = for downgrade.

Source: Moody's Financial Metrics™

Exhibit 10

Moody's-Adjusted Debt Breakdown

Braskem S.A.

(in US Millions)	FYE Dec-16	FYE Dec-17	FYE Dec-18	FYE Dec-19	FYE Dec-20	LTM Ending Mar-21
As Reported Debt	10,375.4	10,058.8	9,236.4	10,428.4	11,019.1	10,404.3
Pensions	27.7	47.3	47.4	40.8	49.1	45.2
Non-Standard Adjustments	716.7	352.3	373.4	360.7	0.0	0.0
Moody's-Adjusted Debt	11,119.8	10,458.5	9,657.1	10,829.9	11,068.2	10,449.5

All figures are calculated using Moody's estimates and standard adjustments.

Source: Moody's Financial Metrics™

Exhibit 11

Moody's-Adjusted EBITDA Breakdown
Braskem S.A.

(in US Millions)	FYE Dec-16	FYE Dec-17	FYE Dec-18	FYE Dec-19	FYE Dec-20	LTM Ending Mar-21
As Reported EBITDA	1,690.6	3,728.0	2,642.6	627.1	-168.7	1,612.9
Pensions	2.5	6.7	4.0	8.9	4.3	4.1
Interest Expense – Discounting	0.0	-89.3	-74.9	-86.0	0.0	0.0
Unusual	1,734.5	228.0	530.9	1,037.3	2,330.3	1,504.5
Non-Standard Adjustments	-8.7	-12.5	0.2	-2.6	0.0	0.0
Moody's-Adjusted EBITDA	3,418.9	3,861.0	3,102.7	1,584.7	2,165.9	3,121.4

All figures are calculated using Moody's estimates and standard adjustments.

Source: Moody's Financial Metrics™

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